Chapter 14
Service Robots:
Practical Applications in the Hospitality Industry in Spain

Maria Angeles Garcia-Haro
http://orcid.org/0000-0001-8844-4076
University of Castilla-La Mancha, Spain

Maria Pilar Martinez-Ruiz
http://orcid.org/0000-0002-5890-5174
University of Castilla-La Mancha, Spain

Ricardo Martinez-Cañas
http://orcid.org/0000-0003-4629-5513
University of Castilla-La Mancha, Spain

Pedro Luis Pinedo-Sierra
University of Castilla-La Mancha, Spain

ABSTRACT

At present, the tourism sector is undergoing a period of profound transformation, driven, among other factors, by technological innovation. In this context, artificial intelligence and service robots are being progressively integrated into tourism businesses as strategic tools to enhance operational efficiency and enrich the customer experience during service delivery. Despite the growing academic interest in the application of service robots within the hotel sector, research specifically focused on the Spanish hotel remains very limited. This study aims to contribute to this gap in the literature through the analysis of real case studies examining the implementation of service robots in Spanish hotels. The results indicate that, although the

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adoption of these systems is still incipient and the number of Spanish hotels that have operationally implemented service robots remains relatively small, the outlook for their development and implementation in the coming years is clearly favorable.

INTRODUCTION

Tourism is one of the fundamental pillars of the Spanish economy, playing a strategic role in generating wealth and employment (WTTC, 2025). In 2024, the tourism sector accounted for 13% of the national Gross Domestic Product and generated more than 2.5 million jobs (Statista, 2025). Recent forecasts reinforce this upward trend. According to the World Travel & Tourism Council (WTTC, 2025), by 2035 the tourism sector could contribute up to 17% of Spain's economic output, representing approximately 4 million jobs. At present, the sector is undergoing a deep and accelerated transformation, driven by the adoption of new technologies that influence all stages of the travel experience, from the initial information search to the on-site experience at the destination. This transformation is taking place in a context marked by significant challenges, including the need to move towards a more sustainable tourism model, leverage technological advances without losing human contact, strengthen talent retention, and redefine employee training to meet the evolving expectations and needs of travelers (Torregrosa, 2025).

In this evolving landscape, artificial intelligence (AI) has emerged as a fundamental pillar of tourism development, integrating tools that extend far beyond chatbots or virtual assistants. These technologies enable the anticipation of customer preferences, the optimization of operational processes, and the reduction of inefficiencies throughout the customer journey (Puertas, 2025). Today, AI and robotics have become ubiquitous across different tourism contexts, including accommodation, airlines, restaurants, and other services-related activities (Park, 2020). The advancement of these technologies has driven the integration of AI into SR (hereinafter SR), which aims to increase operational efficiency and enrich the customer experience (Cao et al., 2025). In recent years, the presence of these robots has expanded significantly, moving from their initial use in industrial contexts to dynamic service environments (Ivanov et al., 2020). Consequently, SR are assuming an increasingly important role in so-called service encounters, where they interact directly with users (Tuomi et al., 2021). Previously confined to industrial environments such as factories, robots have progressively expand into hospitals, classrooms, and some public spaces, collaborating with humans and support a wide range of activities, from operational and production processes to research and knowledge-based tasks (International Federation of Robotics, 2022).

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